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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,845	11/21/2005	Kees C J M N Brekelmans	35015/045US	3915
32827 7590 08/06/2007 THE OLLILA LAW GROUP LLC 2060 BROADWAY SUITE 300 BOULDER, CO 80302			EXAMINER SHAH, SAMIR M	
			ART UNIT 2856	PAPER NUMBER
			MAIL DATE 08/06/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/531,845	Applicant(s) BREKELMANS ET AL.	
	Examiner Samir M. Shah	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Please note the Examiner working on this application has been changed. Examiner Samir Shah is now examining this case instead of Examiner Ryan Christensen.

Response to Arguments

2. Applicant's arguments, see page 11, filed 4/06/2007, with respect to the drawings and claim 8 have been fully considered and are persuasive. The objection of the drawings and claim 8 has been withdrawn.

3. Applicant's arguments, see pages 11-15, filed 4/06/2007, with respect to 35 U.S.C. 102(b) rejection of claims 1-4, 6, 9, 11-13, 21, 22, 24, 31, 33 and 38 as being anticipated by Breedlove (US Patent 3,393,562 henceforth "Breedlove") have been fully considered but they are not persuasive.

(a) As to Applicants' argument, "the device of Breedlove does not measure the temperature of the sample gas upstream and downstream of the heating or cooling element...the entire sample gas is consumed in the combustion process whereby there is no sample gas left downstream of the combustion point...there are only exhaust gases produced from combustion of the sample gas and air", the Examiner disagrees.

Breedlove discloses, "[t]hermocouple 13 is located above the flame of burner 12 so as to sense the temperature of the exhaust gases...[t]hermocouple 14 is located

beneath burner 12 to sense the temperature of the air supply immediately prior to its heating" (figure 1; column 2, lines 48-61); and, "sample gas input will have a particular B.t.u. per cubic foot content, which when burned with the excess air supply will yield a temperature rise mainly determined by the B.t.u. absorption by the combustion products mixed with the excess air" (column 3, lines 60-65). Thus, Breedlove clearly discloses measuring the temperature of the sample gas upstream and downstream of the heating or cooling element/burner (12).

Moreover, in response to applicants' argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "the entire sample gas is consumed in the combustion process whereby there is no sample gas left downstream of the combustion point") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

(b) As to Applicants' argument, "the device of Breedlove does not employ temperature differences measured on one or more calibration substances to one or more characterizing features of the flowing substance, but instead uses temperature difference between the sample gas, itself, mixed with air and exhaust gases produced by the combustion of the sample gas and air", the Examiner disagrees.

Breedlove discloses evaluating a characterizing feature (Wobbe index) of the flowing substance comprising a function (column 4, lines 20-73) relating temperature

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differences (T = absolute temperature), which clearly has to be measured on one or more calibration substances since absolute temperature, by definition, is temperature measured relative to absolute zero.

Claim 1 recites two separate/distinct limitations: "a temperature difference in the flowing substance upstream and downstream of the heating or cooling element" (claim 1, lines 6-7) and "temperature differences measured on one or more calibration substances" (claim 1, lines 12-13). Applicants' argument, "Breedlove does not employ temperature differences measured on one or more calibration substances... uses temperature difference between the sample gas, itself, mixed with air and exhaust gases produced by the combustion of the sample gas and air" is based on confusing these two separate/distinct limitations as being one and the same, which would be incorrect.

(c) As to Applicants' argument, "Breedlove neither teaches nor suggests... a calibration equation", the Examiner disagrees.

Breedlove clearly discloses a calibration equation (column 4, lines 61 - column 5, line 10).

(d) As to Applicants' arguments concerning claims 4, 6, 9, 11-13, 22, 24, 31, 33, 36 and 38, the Examiner disagrees. Please refer to the rejection set forth below for these claims, as being anticipated by Breedlove.

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(e). In conclusion, the above-mentioned rejection is maintained and hereby made FINAL.

4. Applicant's arguments, see pages 15-16, filed 4/06/2007, with respect to 35 U.S.C. 103(a) rejection of claims 1, 3, 4, 8, 11, 12, 14, 15 and 17-22 as being unpatentable over Nukui et al (US Patent 5,167,450 henceforth "Nukui") in view of Breedlove or Foster et al. (US Patent Application Publication 2002/0141945 henceforth "Foster") have been fully considered but they are not persuasive.

(a) As to Applicants' argument concerning the lack of teaching, by the above-mentioned combination, of "evaluation means...for evaluating a characterizing feature of the flowing substance comprising a function relating temperature differences measured on one or more calibration substances to one or more characterizing features of the flowing substance", the Examiner disagrees.

As mentioned in the previous Office Action mailed on 2/05/2007, Nukui does not expressly disclose a function relating temperature differences measured on one or more calibration substances to one or more characterizing features of the flowing substance as defined in claims 1 and 21.

However, Breedlove discloses relating the output of calorimeter (10) to the Wobbe index, which relates temperature differences/absolute temperature (T) measured on one or more calibration substances to one or more characterizing features

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(such as differential pressure) of the flowing substance. Please refer to the 35 U.S.C.

103(a) rejection of claims 1 and 21, for further explanation.

(b) As to Applicants' arguments regarding claims 1, 21, 4, , 8, 15, 17, 18, 19 and 20 as related to the reference Nukui, please refer to the 35 U.S.C. 103(a) rejection of these claims as being unpatentable over Nukui in view of Breedlove or Foster.

5. Since the Applicants have not provided any arguments/remarks in response to the 35 U.S.C. 103(a) rejection of claims 5, 10, 23, 32, 36 and 37 as being unpatentable over Nukui in view of Breedlove or Foster, and further in view of Bonne (US Patent 5,311,447 henceforth "Bonne"), the rejection is maintained and hereby made FINAL.

Similarly, due to the lack of arguments/remarks provided in response to the 35 U.S.C. 103(a) rejection of claim 30 as being unpatentable over Nukui in view of Breedlove or Foster, and further view of Bonne, and still further in view of Bonne (European Patent Application Publication EP 0554095 henceforth "Bonne (EP)"), the rejection is maintained and hereby made FINAL.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4, 6, 9, 11-13, 21, 22, 24, 31, 33, and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Breedlove.

(a) As to claims 1 and 21, Breedlove discloses a device (10) and a method for the characterization of a flowing substance comprising:

a transport duct/gas line (17) on which is mounted a local heating/cooling element/burner (12) (figures 1-5; column 2, lines 2-11),

a temperature difference sensor (column 2, lines 48-61) comprising a first temperature measurement cell downstream of the heating element (12) (figures 1-5; column 2, lines 48-61) and means (thermocouples (13, 14)) to determine a temperature difference in the flowing substance upstream and downstream of the heating element (figures 1-5; column 2, lines 54-56),

flow control means comprising flow measurement means (21) for measuring a mass flow characteristic ("flow measure" (21), figure 1) and flow correction means/controller (38)/valve (32) for correcting measured mass flow variations (figures 1-5; column 6, lines 6-9), and

evaluation means for evaluating a characteristic feature (Wobbe Index) of the flowing substance comprising a function relating/comparing temperature differences (absolute temperature T) measured on one or more calibration substances to one or more characterizing features (i.e. differential and absolute pressures) of the flowing

substance (figures 1-5; column 4, lines 42-73).

(b) As to claim 2, the function comprises a calibration equation (column 4, lines 42-73).

(c) As to claim 3, Breedlove discloses a flow rate means (15, 16) for adjusting flow through the duct (17) in a detection range of the temperature difference sensor (column 3, line 44-65).

(d) As to claims 4, 22, and 31, Breedlove discloses the flow measurement means (21) comprising a pressure measurement cell for measuring a pressure difference over the temperature difference sensor (near orifice (20)) and the flow correction means (32, 38) comprising a pressure difference control means for maintaining a substantially constant pressure difference over the temperature difference sensor (figures 1-5; column 2, line 66 - column 3, line 3; column 4, lines 3-9; column 6, lines 6-9).

(e) As to claims 6, 24, and 33, Breedlove discloses the flow measurements means (21) comprising a mass flow sensor ("flow measure", figure 1) measuring the mass flow through the temperature difference sensor (near the orifice (20)) and the flow correction means (32, 38) comprising a mass flow control means (controller (38)) for maintaining a substantially constant mass flow through the temperature difference sensor (column 4, lines 3-42; column 6, lines 6-9).

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(f) As to claims 9, 13 and 38, Breedlove discloses temperature correction means (such as controller (15)) to correct for an absolute temperature variation in the flowing substance (column 3, lines 33-65).

(g) As to claims 11, 12, and 36, Breedlove discloses a pressure correction means (such as controller (38)) for maintaining a substantially constant absolute pressure in the flowing substance (figure 2; column 6, lines 6-22).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1, 3, 4, 6, 8, 11, 12, 14, 15, 17-22, 27-29, 31 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nukui in view of Breedlove or Foster.

(a) As to claims 1 and 21, Nukui discloses a device and a method for the characterization of a flowing substance comprising:

a transport duct (81) (figure 5)/stream pipe (1) (figure 1) on which a heating element (80b) (figure 5)/heater (8b) (figure 1) is mounted (figures 1, 4, 5; column 4, lines 40-43; column 5, lines 34-41; column 6, lines 4-13),

a temperature difference sensor comprising a first temperature measurement cell/thermostatic chamber (12) downstream of the heating unit and means for determining the temperature difference in flowing substance upstream and downstream of the heating element (figure 4; column 5, lines 15-32; column 7, lines 16-21),

flow control means (8) comprising a flow measurement means (8a) for measuring a mass flow characteristic and flow correction means (8b) for correcting for measured mass flow variations (figure 5; column 5, lines 29-34; column 6, lines 46-54), and

evaluation means/computer unit (10) for evaluating a characteristic feature/calorific value/mass flow of the flowing substance related to the measured flow characteristics (figure 4; column 5, lines 10-14; column 8, lines 3-10).

However, Nukui does not expressly disclose a function relating temperature differences measured on one or more calibration substances to one or more characterizing features of the flowing substance as defined in claims 1 and 21.

Breedlove discloses relating the output of calorimeter (10) to the Wobbe index, which relates temperature differences/absolute temperature (T) measured on one or more calibration substances to one or more characterizing features (such as differential pressure) of the flowing substance (column 4, lines 68-73).

Foster (paragraph 0113) discloses the use of a known gas in order to calibrate a calorimeter.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system disclosed by Nukui, by including a function such as the Wobbe index relating temperature differences measured on one or more calibration substances to one or more characterizing features (such as the calorific value, mass flow or differential pressure), as suggested by Breedlove/Foster, because this would provide an additional measure that is helpful in maintaining a constant flow of the flowing substance, as taught by Breedlove (column 4, line 55 - column 5, line 23).

(b) As to claim 3, Nukui discloses a flow rate means/regulator (9) for adjusting flow

through the transport duct (1, 81) in a detection range of the temperature difference sensor (figure 4; column 4, lines 52-55).

(c) As to claims 4, 22, and 31, Nukui discloses the flow measurement means (8a) comprising a pressure measurement cell/pressure gauges (4, 4a)/differential pressure gauge (6) for measuring a pressure difference over the temperature difference sensor and the flow correction means/regulating device (9) comprising a pressure difference control means/reducing valve (2) for maintaining a substantially constant pressure difference over the temperature difference sensor (figure 4; column 4, lines 40-58).

(d) As to claim 6, Nukui discloses the flow measurement means (8a) comprising a mass flow sensor (including 80e, 80f) measuring the mass flow through the temperature difference sensor and the flow correction means/regulating device (9) comprising a mass flow control means for maintaining a substantially constant mass flow through the temperature difference sensor (figures 4, 5; column 4, lines 40-58; column 5, lines 33-52).

(e) As to claims 8 and 35, Nukui discloses a mass flow sensor but does not explicitly disclose the use of a Coriolis, ultrasonic or sonic nozzle mass flow sensor to sense the mass.

However, these type of mass flow sensors are known in the art and it would have been well within the purview of one of ordinary skill in the art to replace the mass

sensor, disclosed by Nukui, with a Coriolis or an ultrasonic mass flow sensor because the courts have held substituting an equivalent for the same known purpose not to be inventive (See MPEP 2144.06).

(f) As to claims 11 and 12, the pressure reducing valve (2) maintains a substantially constant absolute pressure in the flowing substance (figure 4; column 4, lines 43-46).

(g) As to claim 14, Nukui discloses transport duct (82) being mounted as a bypass on main duct (81) (figure 5).

(h) As to claim 15, the Examiner takes official notice that switches are well-known in the art to turn-off particular components within an assembly without affecting the functioning of the entire assembly. Therefore, it would be obvious to one of ordinary skill in the art to include a switch for turning off the flow control means (8b) without affecting the function of the rest of the apparatus that would continue taking measurements.

(i) As to claims 17-20 and 27-29, Nukui discloses determining the heat capacity or heat of combustion or Wobbes index of the flowing substance (i.e. characterizing the substance with the temperature differential). One of ordinary skill in the art would be aware that these properties of the flowing substance could be used to identify it and where different substances have different sources the determined properties could

identify the source of the substance.

11. Claims 5, 7, 10, 23, 32, 34, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination as applied to claims 1 and 21 above, and further in view of Bonne.

As to claims 5, 7, 10, 23, 32, 34, 36 and 37, the combination as applied to claims 1 and 21 discloses keeping a constant absolute temperature and pressure (column 6, lines 3-14).

However, the combination does not explicitly disclose using a computer to compensate the calculated values when either the absolute pressure or temperature vary.

Bonne discloses a system for the measurement of gases fed to combustion devices. Bonne operates in a manner similar to that of Nukui, with a heater and temperature sensor for detecting the heat capacity of thermal conductivity of a gas. Bonne further discloses the importance of maintaining the constant temperature and pressure, as well as a method of correcting measurements when the temperature and pressure vary (column 9, lines 58-66, column 18, lines 3-31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system disclosed by Nukui by compensating for changes in the absolute temperature and pressure through known calculations in order to arrive at more accurate results.

12. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination as applied to claims 1 and 21 above, and further in view of Bonne (EP).

As to claim 30, the combination as applied to claim 21 does not explicitly disclose the detected parameters for determining a mixing ratio.

However, Bonne (EP) discloses mixing oxygen with a combustion gas based on sensed parameters such as heat capacity (page 7, lines 47-56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system disclosed by the combination, as applied to claim 21, by using measured parameters to determine the ratio for mixing the combustible gas and oxygen, as suggested by Bonne (EP), in order to ensure efficient combustion.

Allowable Subject Matter

13. Claims 7 and 34 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

14. The prior art made of record and not relied upon, cited in the attached 892 form, is considered pertinent to applicant's disclosure.

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

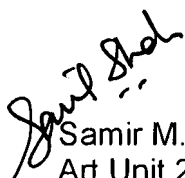
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


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16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samir M. Shah whose telephone number is (571) 272-2671. The examiner can normally be reached on Monday-Friday 9:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Samir M. Shah
Art Unit 2856
08/02/2007


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